Economic Council
of Canada

Conseil économique
du Canada

Working Paper
Document de travail

92-02059/

Working Paper No. 21

The Goods/Services Convergence Hypothesis

An Analysis

Harry H. Postner

1991

ISSN 1180-3487

The Goods/Services Convergence Hypothesis

The findings of this paper are the sole responsibility of the author and, as such, have not been endorsed by the Economic Council of Canada.

The Economic Council's Working Papers are protected by the Crown copyright and may be reasonably quoted under the terms of Canada's copyright laws. Requests for permission to reproduce or quote long excerpts should be addressed to:

Director of Publications
Economic Council of Canada
P.O. Box 527
Ottawa, Ontario
K1P 5V6

Contents

Acknowledgments	**vii**
Foreword	**ix**
A Introduction	**1**
B Standard Distinctions between Goods and Services	**2**
C The Economic Implications	**4**
D Newly Emerging Trends	**6**
E The Goods/Service Convergence Hypothesis: Does Intangibility Really Matter ?	**9**
F Conclusion	**13**
Annex on Retail Trade	**14**
Notes	**17**
Bibliography	**19**

Acknowledgments

This paper has benefited from the instructive comments and stimulating suggestions received from two individuals. Special thanks are due, therefore, to Gordon Betcherman of the Economic Council of Canada and to Zoltan Kenessey of the Federal Reserve Board, Washington, D.C. The paper has also benefited from remarks and queries originating from two referees. It should be added that Richard Ruggles of Yale University read an earlier version of the paper and contributed some penetrating comments.

Foreword

Economists and statisticians have traditionally emphasized the distinctions between goods and services. At the same time, conventional economic theory and measurement seem to be oriented towards the "goods economy" even though the present-day economy is dominated by services. Do we, then, have the theoretical and measurement apparatus required to analyse the "services economy"? This is, in effect, the key question posed by the paper.

It turns out, however, that the traditional distinctions between goods and services are becoming obsolete in advanced economies. With appropriate extensions and reinterpretations, economic theory and measurement can be applied to the contemporary economy dominated by "services." To reach this conclusion requires incorporation of knowledge from the accounting literature in combination with economics and statistics.

This study was undertaken as part of a project on employment and the service economy. Harry Postner is a senior researcher with the Economic Council of Canada.

Judith Maxwell
Chairman

A Introduction

The main purpose of this paper is to provide a new view of conceptual issues relating to the services economy. Here a broad view is taken of the services economy with emphasis on some basic conceptual issues and their implications for economic analysis.[1]

The original aim of our investigation was to analyse the important economic (conceptual) distinctions between goods and services. The general idea was to consider the proposition that much of economic theory and measurement are largely oriented towards the experience of a "goods economy" and are, therefore, significantly irrelevant to the present-day economy dominated by services employment and production. This proposition, if true, would indeed be a serious charge against and a serious defect of professional economics. Sections B and C of this paper attempt to pursue this *theme* for what it is worth.

It turns out, however, that a deeper investigation reveals that this theme is rapidly becoming outmoded. The analysis of newly emerging trends, in Section D, shows that the supposed "rigid" distinctions between goods and services tend to be exaggerated and, in many cases, simply lack substance. In line with the contemporary situation in advanced economies, modern economics does not warrant a sharp separation between goods and services. There is *no* need for a drastic overhaul of traditional economic theory and statistics to reflect the well-known dominance of the services sector. Rather, we would recommend that economic theory and statistics require some reinterpretation and continued future development in order to satisfy the needs of the "services economy," including the needs of policy measures adapted towards such an economy.[2]

All this is more precisely spelled out in Section E of this paper under the title, The Goods/Services Convergence Hypothesis. We offer considerable evidence supporting this hypothesis based on a wide range of current economic trends, both statistical and conceptual. One feature of our approach is the incorporation of knowledge from the business accounting literature in combination with the findings of the literature of economics and statistics. Section E also attempts to answer the key question of this paper: *Does Intangibility Really Matter*? It might be noted that while other writers have discussed some ideas similar to those embodied in the paper, we present to our knowledge the most detailed and systematic attempt to state and support the "goods/services convergence hypothesis." And many specific guidelines are offered by which the hypothesis can be further developed and applied for both economic policy and theoretical purposes.

Finally, the general flavour of this paper is essentially nontechnical in orientation. The few cases where technical material is introduced can easily be

overlooked by the nontechnical reader without loss of continuity. On the other hand, references to the technical literature are provided to those readers seeking further clarification or discussion. In effect, then, the paper is an *introduction* to the subject matter rather than a definitive treatment. Some ideas as to where a "definitive treatment" may eventually lead are mentioned in the paper's Conclusion, Section F.

B Standard Distinctions between Goods and Services

This section contains a survey of the "state of the art" with respect to conceptual distinctions between goods and services. The survey is kept relatively brief since much of the material is already available to interested readers. We also wish to devote most of this paper to a discussion of new material and trends that are not readily available.

Before continuing, it might be useful to explain the general "rules of the game" under which the paper operates. The exposition is largely oriented to the market economy of an industrial nation (Canada). The emphasis, throughout, is on matters of basic conceptual interest rather than empirical and quantitative matters. Where direct empirical evidence is needed, we usually refer to the Economic Council of Canada's publication on employment [1991] mentioned in footnote 1 or to other easily available references. One more "rule of the game" is that the orientation is directed towards the production (and employment) side of the economy (i.e., we are essentially dealing with the gross production [supply] and net production [value-added] perspectives of the Canadian market economy rather than the final demand perspective). This means that the use of the economic concepts of "goods" and "services" should be interpreted in terms of production and not necessarily in terms of final demand (though some exceptions to this rule may be noted). Finally, it should be noted that the paper could be read and understood independently of the many references provided; in the traditional sense of the economic literature, the paper is meant to be self-contained.

It seems convenient to begin with some very brief historical remarks. The analysis of the services economy has had a rather curious history. Initially, say beginning with Adam Smith, most services were not even recognized as part of economic output. By the turn of this century, however, services were included in measures of economic output; but the particular conceptual characteristics of service output (and service employment) were not spelled out. Indeed, services were regarded as merely a "residual" after accounting for primary goods output (agriculture, fishing, forestry, and mining) and for so-called secondary goods output (mostly manufacturing and construction). Sometimes services were referred to as "tertiary output" [as in Fisher 1939]; but this nomenclature had no special significance. In fact, it is only recently,

during the past 15 or 20 years, that economists and statisticians have begun to explicitly analyse the special features of a services economy vis-à-vis the goods economy (i.e., the primary and secondary output sectors). Even now, however, the problem of conceptually distinguishing goods from services and showing its implications for economic analysis has not yet received the professional attention it deserves. In any event, the term "services sector" in this paper refers to all production activities of the market economy that are outside the primary and secondary "goods sectors."

By far, the leading analysis in this area during the past 10 or 15 years has been done by Peter Hill [1977 and 1987]. Since Hill's work is often quoted in the economic literature [e.g., Grubel and Walker 1988], we will merely sketch out the main ideas. First, Hill shows that a necessary condition for an item to be a good *or* a service (i.e., a "commodity") is that it must be capable of being the subject of a transaction between two or more different economic units. In this paper, we are mainly concerned with transactions between producers and consumers, both intermediate and final, but from a (conceptual) production point of view. Then, following the work of Hill [1977 and 1987], a "good" may be defined as a physical object which, *once produced*, is transferable between economic units. An essential feature of goods production is that outputs are capable of being traded and retraded; there is a supposedly clear separation between the process of production and the ultimate consumption or use of the output produced.

On the other hand, also following Peter Hill, a "service" may be conceptually defined as a *change* in the condition of an economic unit resulting from the activity of another economic unit with the prior agreement of the former unit (thus ruling out "externalities"). While the ownership of a "good" can be transferred or exchanged from one economic unit to another, no such exchange is possible for a "service." More exactly, one might characterize the situation as follows. A service is typically produced by one economic unit specifically for consumption by another economic unit; services are consumed as they are produced; in effect, production and consumption of services are two aspects of the same process. The consumption of a "service" cannot be detached from its production in the way that the acquisition of a "good" by a consumer may take place via an exchange transaction. "Goods" can be held in storage and later exchanged; but "services" cannot be put into stock because a stock of *changes* (by definition) is a logical impossibility!

From the above considerations, we can then infer the four *standard* conceptual distinctions between "goods" and "services" put in their respective order: 1) tangibility vs. intangibility; 2) no direct contact vs. direct contact between producer and consumer; 3) transferability vs. nontransferability; 4) storability vs. nonstorability. (A fifth conceptual distinction is mentioned in the next section.) In the application of these standard distinctions, it is

usually assumed that the idea of a *change* in the condition of an economic unit, underlying the definition of "services," is capable of unambiguous interpretation. This means that so-called "preventive" services, or protection services, are often overlooked (see the discussion of Hill's paper in Grubel [1987]). In addition, it is implicitly assumed that the "goods" producer typically has no idea who will eventually acquire or consume the goods being produced in contrast to the situation with respect to "services" production.

To be fair, Peter Hill does recognize the existence of exceptions and borderline cases with respect to the standard conceptual distinctions. But his emphasis is always on the "essentials of the rule" rather than the "exceptions to the rule" (see further discussion in Sections C and D of this paper). Indeed, Hill's analytical distinctions are given a thorough application, with many examples, in the *United Nations Manual on National Accounts* [1979] (see particularly the applications in Chapters V and VIII of the manual). It should also be noted that the earlier paper by Hill [1977] contains a sophisticated *cross-classification* of various types of "services" that stem from the basic conceptual definition. So the exposition here is a considerable simplification of Hill's analysis. This is due to our desire to highlight the essential issues in this introductory paper and with emphasis on new and original ideas.

C The Economic Implications

At first glance, it might appear that the standard distinctions between goods and services, outlined above, would tend to hold true today for most practical purposes. Even if this were so, it might be argued that such conceptual distinctions have a purely academic flavour. However, the purpose of this paper is *not* to present an academic exercise; the distinctions have important implications for economic analysis to which we now turn. Since many, but *not* all, of these implications have been discussed in the economic literature, our treatment is again kept brief and selective. Good surveys and further details with respect to *some* of the implications can be found in Hill [1987] and Petit [1987].

The orthodox discussion implies that since services are "intangible" and "nontransferable," then service outputs are difficult to measure, at least in contrast to goods. It is correspondingly difficult to identify the precise nature of service commodities in contrast to the services industrial production activities responsible for the commodities. This causes serious problems related to implementing standard systems of services classification [see Hill 1987]. At the same time, it is difficult to decompose the current valuations of service transactions into their "price" and "quantity" components – a decomposition that is essential for the application of basic economic theory [see Petit 1987]. Moreover, since services, once produced, cannot be

exchanged after delivery and consumption (services imply direct contact between producer and consumer), the probability of price discrimination arises. In effect, the potential for "arbitrage" of services and the corresponding fundamental "law of one price" [as in Ross 1987] are ruled out, almost by assumption! This has the additional consequence that "price indices" for services are ambiguous and very difficult to construct (even aside from the problem of valuation decomposition mentioned above).

All these factors raise critical issues in the application of economic analysis with respect to production efficiency and economic welfare measurements. (See further discussion in Sections E and F.) But this is not all! Since services are supposed to *change* the conditions of economic units, following Hill's basic definition, it turns out that both economic agents and their economic possessions can also be changed (i.e., diversified), indefinitely via the consumption of services. So this has the result that many economic comparisons over time and space become complex and confused because of the implicitly "unique" nature of services transactions and their repercussions.

The economic implications in the preceding paragraphs are reasonably well known, though often overlooked. But there are other implications that are more subtle and that have not yet been fully analysed. Since services are supposed to be nonstorable (standard distinction number four), then services cannot be subject to inventory or change in inventory. The basic economic notions of "excess supply" and "excess demand," with corresponding accumulation and decumulation of stocks, become inoperable. This has the important consequence that the traditional economic price-adjustment process [as in Hahn 1987] is difficult to apply and is possibly irrelevant. In effect, price changes for services, even if "correctly" measured, become essentially devoid of economics substance! Furthermore, the whole measurement apparatus of: 1) new and unfilled orders, 2) productive capacity, 3) inventories, that plays a key role in business-cycle analysis [see Zarnowitz 1973] appears to be inapplicable to a services-dominated economy. We simply do not have the required economic indicators for current short-term economic analysis. The problem of the supposed lack of such indicators was recently mentioned, very briefly, in Sommers [1988] and Statistics Canada [1989] but without an in-depth analysis.

It would appear, therefore, that a good deal of conventional economics theory and measurement are really oriented to a "goods economy." The theory and measurement seem largely irrelevant to the dominance of today's "services economy" as evident, for example, in the Economic Council of Canada's publication on employment [1991] and the OECD's Report of Blades [1987]. If all this were true, it would constitute a serious charge against the profession of economics. So there is a real challenge to try to resolve some of the theoretical and measurement problems related to services. Or, at least, we

should be moving in the direction of extending and reinterpreting conventional economics doctrines so that they may be more relevant to our present-day services economy.

D Newly Emerging Trends

Before jumping to radical conclusions, we now try to show that a deeper investigation, partly based on *emerging trends*, is warranted. This "deeper" investigation is based on a new point of view (the "goods/services convergence hypothesis"), which is more systematically explained in the next section of this paper. In the present section, we mainly concentrate on issues of interpretation largely stemming from newly emerging trends in the economy. The emphasis is, again, primarily conceptual rather than empirical.

First, it should be clear that what is officially classified as a "good" and what is classified as a "service" is merely a reflection of the particular final form in which an economic transaction occurs. But it is at least equally meaningful to observe the nature of the whole *value added* underlying the relevant transaction between a producer and a consumer. It is now increasingly recognized that a great deal of services-type activity is embodied in the value added (as well as in the gross output) of goods production. This is sometimes called "own-account" services activity of goods producers. Similarly, a considerable amount of activity characterized by goods-like qualities is typically inherent in the value added of services production. (Some empirical discussion of both kinds can be found in Chapter 3 of the Economic Council of Canada's publication on employment [1991].) So the traditional standard distinctions between "goods" and "services" become rather blurred from the simple viewpoint of value added as a whole. It might also be noted that the increasingly popular business practice of marketing "goods" and "services" as a "bundle of tied commodities" is also evidence of the blurring of the four standard distinctions outlined in the previous section. Some examples would be: repair, training, and transportation services marketed together with manufactured goods. But much more could be said!

It is our belief that the nature of both goods and services requires some reexamination over and above the argument in the preceding paragraph. For example, it is incorrect to claim that there is typically a "clear separation" between the production of goods and their consumption (whether intermediate or final). While this claim *may* hold true for primary goods (agriculture, fishing, forestry, and mining), it is not necessarily true for secondary goods production (manufacturing and construction). The typical manufacturer produces under contract or "on order," particularly with respect to intermediate goods for further processing and with respect to investment goods. Almost all machinery and equipment are manufactured via specifications worked out

by means of close cooperation between the producer and the user of these investment goods. One may even argue that while the manufacturer of final consumer goods may not know who the ultimate consumer really is, consumer goods are normally channelled through a distribution system: the manufacturer produces to satisfy the "orders" from the wholesaler, who services "orders" from the retailer, who then provides the final distribution services to the consumer [see United Nations 1979]. In addition, it should be noted that nonresidential construction and a major part of residential construction are also subject to direct contacts and contracts between producer and consumer (often without intermediaries).

More generally, the trend today is towards user-oriented and "custom built" goods-production operations. In effect, the individual parts may be mass-produced but are assembled and integrated according to particular-user preferences. And what is custom-built, according to carefully selected specifications, is not easily subject to trading, retrading, and arbitrage. This implies that the concept of "transferability" (one of our key standard distinctions between goods and services) via exchange markets and second-hand markets is often non-existent or limited to "scrap value." Moreover, the emerging trend towards producing custom-built goods on special order is reinforced by the increasingly popular process of "just in time inventory." So at least three of the four standard distinctions characterizing the production of goods in contrast to services, outlined above in Section B, appear to be of diminishing importance.

Before continuing, it should be briefly noted that there is a *fifth* "standard distinction" between goods and services that is sometimes mentioned in the literature. For example, Holmstrom [1985] argues that services production are typically characterized by "flexible" processes in contrast to the "rigid" factor combination specifications that are embodied in manufacturing (and construction) production activities. Holmstrom offers a number of examples to back up his argument. However, it is now increasingly recognized that the computer automation of manufacturing process has introduced a good deal of "flexibility" into such operations [see Economic Council of Canada 1987]. There are also examples of new "flexibility" of construction activities. So once again a standard distinction between goods and services tends to be blurred.

A related argument is sometimes made that conventional costs of production play a minor role in the total cost structure of important services such as computer software and communications as well as finance and real estate services. An investigation by Carter [1989] shows that cost categories such as marketing, research and development, and management are each at least as important as the conventional production cost category. But once again, this phenomenon is not peculiar to services; the same type of cost structure is

prevalent in many high-tech manufacturing industries and even in more traditional manufacturing (women's clothing and automobiles) where design costs and change-over costs become significant [see again Carter 1989, 39-42].

If "goods" are becoming more like "services," it is also apparent that "services" are becoming more like "goods." An increasing proportion of service transactions involve producer-type (intermediate) services purchased and consumed by other service producers in the course of their operations. Consider, for example, advertising-media services consumed by the entertainment service industry (additional evidence in Economic Council of Canada [1991] and the U.S. input-output study of Duchin [1988]). Thus, intangible services too are subject to "further processing" just like tangible goods (our first standard distinction). Sometimes the intermediate services are not completely consumed but become candidates for "transferability." Consider, for example, legal services purchased by an engineering services firm that provide the firm with a valuable *learning* experience that can, potentially, be remarketed. Indeed, it is also possible to show examples of intangible services being subject to "delivery lags," depending on the supplier's "productive capacity." In fact, many business consultant services, in the broad sense of the term, are subject to new orders and unfilled orders – normally associated with the production of tangible goods (further discussed in the next section of this paper).

There are, in addition, other emerging technological trends stimulated by the information/communications revolution. The product of many business information services – computer software, advisory consultants' reports, audio-visual presentations – can be put in physical form and *stored* for future use. Telecommunications per se and its utilization in service industries implies that the provision of many services no longer requires "direct contact" between producer and consumer. And many so-called "personal services" discussed in the literature can be provided in rigid standardized form with characteristics similar to goods. Consider, for example, fast-food operations, automated tellers, and computerized education and health-care systems. In all these cases, the interpersonal flexibility element as well as the direct contact element is being reduced or removed from service transactions. (This is again in contrast to the fifth conceptual distinction introduced by Holmstrom [1985] and other writers.) Other examples of these emerging trends are illustrated by the new identification of the micro "unit of service" designed to promote service production efficiency [see *The Economist* 1990, 79]. The idea of a "unit of service" also turns up in the latest research on problems of statistical measurement outlined in the next sections.

It should be noted that the special case of retail-trade services requires some extended discussion. The first problem is to translate these services into a

conceptual form so that the basic "services" definition of Peter Hill can be applied. Then we could examine and interpret emerging trends within the retail-trade service industry in order to test whether Hill's definition is sustained. These issues call for a significant *digression* and are, therefore, relegated to an annex at the end of this paper for the reader's convenience. These issues are also of considerable quantitative importance since retail trade is a major employer, in fact the largest services employer, in the Canadian market economy as seen in the Economic Council of Canada's publication on employment [1991]. Once more, it will be found that the distinguishing characteristics of services become rather blurred in the newly emerging retail-trade industry.

Before closing this section, we should add one more piece of evidence from the statistical files of the computer industry. An important observation from a statistician well acquainted with that industry is worth quoting directly [see Cole 1990]:

> Software products are classified in the service sector as part of business services. For close to a decade one has been able to observe that . . . service purchased in small packages by consumers from computer stores or complex operating systems arriving at business sites in trucks. Blank storage media are treated as goods. . . . This present odd distinction between goods and services will vanish in the future as software products are delivered electronically to users.

E The Goods/Services Convergence Hypothesis: Does Intangibility Really Mattter?

It is now possible to state the "goods/services convergence hypothesis" and to show its implications for economic analysis. Indeed, one might say that the purpose of this section is to put it all together. Once more, it should be clear that we are not interested in an academic exercise; our prime interest is in developing new ideas that might be useful for economic analysis and also ultimately useful for the purposes of economic policy.

We would argue that in many cases goods and services can still be distinguished today somewhat along the lines indicated in Section B of this paper. On the other hand, it is evident that such standard distinctions appear to be coming less and less tenable. Judging from emerging and *converging* trends, in the not-too-distant future, we might prefer *not* to make any such two-way distinctions. Rather, economic and statistical analysis should focus on the economic differences between various production "commodities" taken as a whole, some of which may still possess "goods like" and "services like" characteristics. In effect, a new view of the production process would recognize the growing importance of "borderline cases" and the sheer

economic irrelevance of whether a particular commodity is "really" a good or a service. Although some similar ideas have been expressed by other writers [see, for example, Uno 1989; and Drechsler 1990], our conceptual understanding of this proposed "goods/services convergence hypothesis" goes considerably deeper. The key to our interpretation of the convergence hypothesis lies in its potential applications to problems of economic analysis and measurement – some of which were sketched out in a preliminary way in Section C.

Neoclassical economic theory and the corresponding propositions of welfare economics appear to presuppose a "goods economy." To recapitulate, traditional theory assumes that the prices and quantities of all commodities are uniquely identifiable; production and exchange are characterized as separable operations; economic transactions can be physically located and potentially reversed since they are presumably subject to property rights; excess supply is supposed to lead to inventory accumulation and lower prices; all products and agents are distinguishable and not affected by transactions per se. But we now know that the classical "goods economy" as such no longer exists or is at least phasing out. Aside from the dominance of the "services economy," both goods and services are subject to converging characteristics that appear to make the traditional application of neoclassical economic concepts and measurement increasingly difficult.

What can be done? This paper offers two basic suggestions: one of which is stated very briefly, while the second suggestion is spelled out in more detail.

The first suggestion merely recognizes that neoclassical economic theory and related measurements should be regarded as a "conceptual ideal." We now know that the latest developments in modern industrial organization theory [see Carlton and Perloff 1990] permit the *relaxation* of many of the neoclassical presuppositions outlined above. Indeed, some of the microeconomic foundations of the new Keynesian macroeconomics [as in Gordon 1990] are built upon the new industrial organization theory and practice. Unfortunately, however, the orientation of these new developments is still mainly within the context of a "goods economy," but not necessarily subject to the strict distinguishing characteristics of such an economy. For example, the presuppositions of nondiscriminatory pricing, the separation between production and exchange, the roles of inventory accumulation and decumulation, and the ideas of physical location and reversibility of economic transactions – are all de-emphasized in favour of more personal-decision and organizational and institutional characteristics.

The second suggestion returns to one of the basic standard distinctions between goods and services, namely, tangibility vs. intangibility. Although there are illustrations where services can be put in *tangible* form (see the

discussion in the previous section), in almost all cases the commodities produced by the service sector industries tend to remain in *intangible* form. So here is a standard distinction that is essentially sustained in the face of our arguments in favour of converging trends. In what sense then can the "goods/services convergence hypothesis" continue to be maintained? The answer to this key question is as follows: Intangibility Does Not Really Matter! What precisely do we mean by this proposition? Our claim to the validity of this proposition is mainly based on some additional converging trends evident in both business accounting and national economic accounting. These trends are beginning to have an impact on new developments in economic measurement. It will be seen that even if services are essentially intangible, that does *not* mean that analytical and statistical progress cannot be made within a broader economic and accounting framework.

First, in business accounting it is no longer true that services are strictly treated as traditional "intangibles." That is, the accounting conventions whereby services inputs must be immediately "expensed" and services outputs must be immediately treated as "revenue" – no longer hold true. The latest business accounting standards permit "deferment at cost" for services inputs and do not automatically treat services outputs as revenue unless certain specified conditions are satisfied. Some examples of these new generally accepted accounting principles can be found in Postner [1988]; the principles are increasingly similar to the accounting standards applied with respect to tangible goods commodities. This, in effect, means that business accounting rules of *inventory* accumulation and decumulation and including the accounting rules for "work in progress" can be applied to services as well as to goods. These trends will eventually have an impact on a new generation of accounting financial reports and, ultimately, on new economic statistics.

In addition, it is becoming more common in accounting circles to recognize the capital *investment* nature of business production activity related to expenditures on "intangible" services such as: research and development, manpower training, employer health expenditures, and even outlays on advertising and marketing. Capital stock and investment, then, are no longer restricted to tangible goods such as machinery and equipment. In fact, "gestation lags" occur with respect to investment in services as well as investment in physical goods. With a new generation of economic statistics, it will also be possible to apply the measurement apparatus of new and unfilled orders, productive capacity, and inventories to a wide range of service activities and to the benefit of short-term business cycle analysis [see the proposal of Kenessey and Postner 1989]. In fact, work in the direction of measuring the productive capacity of industrial service operations is already well under way [Kenessey 1989]. To some extent, the concepts of new and unfilled orders, productive capacity and inventories require some modification and adaptation to suit services. But statistics are now available, after appropriate interpretation,

to measure *inter alia* "unfilled orders" and "unconsumed stocks" of some services commodities.

The above-mentioned trends in business accounting and their statistical implications are also reflected in current activities related to the revision of the United Nations System of National Accounts (SNA). A good summary of the issues can be found in Carson [1989]. One of the major problem areas facing the revision of SNA is precisely the consideration of service expenditures and service own-account outputs as possible additions to inventory or as possible capital formation and their corresponding recognition as a stock or as a capital asset. The discussion ranges over research and development expenditures, computer software outlays, intellectual property and related rights, franchise fees, certain business services, and various financial service activities (e.g., real estate services). The reader interested in further details should consult Harrison and Carson [1990]. The discussion raises deep issues concerning the boundary of economic production, the nature of economic assets, and the concept of property income. In all cases, it is being increasingly recognized that the traditional "tangibility/intangibility" distinction between goods and services is superfluous for purposes of economic analysis and measurement. If some proposed revisions to SNA are in fact implemented, there would be radical changes in important macroeconomic measurements.

Also of interest is a growing expressed desire, on the part of national economic accountants, to maintain close links with business accounting concepts [see Gorman 1990]. For example, business accounting standards recognize the intangible asset known as "goodwill" in balance sheet statements. But this particular concept is so far excluded from measurements in national economic accounting, even though "goodwill" is the asset embodiment of the business firm's expenditures on various service items. "Goodwill" is evaluated and tradable when the business firm is bought and sold as a going concern. National accountants are now reexamining their position with respect to "goodwill." In addition, it might be noted that attempts to measure and "capitalize" environmental resources as (nonproduced) economic assets are being made. This can be built upon *analogies* between marketable pollution permits and tradable financial assets such as "futures," "options," and other hedging instruments [as in Postner 1991]. These issues are now being dealt with in the new field of national environmental accounting.

The evidence in the preceding paragraphs, based on converging trends in accounting circles, all point in the same direction: intangibility per se does not really matter. The goods/services distinctions, then, are becoming obsolete.

F Conclusion

The goods/services convergence hypothesis permits us to put together a considerable amount of diverse material from the fields of accounting, economics, and statistics. But synthesis, like convergence, is not an end in itself. Our goal, rather, is to provide a foundation for clarification as well as for extension and reinterpretation of existing economics doctrine. Although the new "goods economy" is in a state of considerable change and is not well supported by neoclassical economic theory, the emphasis in this paper is elsewhere. The emphasis is on the new "services economy." There is a need for development of a new generation of "services economy's" theory and measurement which are still in an early stage of development in comparison with the classical "goods economy" paradigm. Again, it does not appear that a radically new economics doctrine is called for to suit the services-dominated economy of today and tomorrow; rather, there is a need for appropriate extension and reinterpretation.

The suggestions in the preceding paragraph are best illustrated once it is realized that many services outputs are, indeed, becoming "storable" and "transferable" and do not necessarily require "direct contact" between producer and consumer. Moreover, the standard distinction of "intangibility" has been shown to be essentially superfluous. So the road is open for a new generation of services statistics featuring inventories of services, capital formation with respect to services, unfilled orders, and work in progress related to services outputs, arbitrage and exchange operations for service commodities, and a more pure international trade with respect to services.

Conceptual developments such as those described above should aid in the identification of "unit quantities" of services real outputs and, therefore, in the decomposition of valuation of services transactions into their price and quantity components.[3] The latter type of decomposition is essential, as noted earlier, for the application of basic economic theory and statistical methodology. The key procedure and vehicle, for all this, appears to be the need for a much more detailed classification and disaggregation of services commodities. Consider, for example, the following quotation from Statistics Canada [1988]:

> The absence of a detailed and up-to-date list of services has far-reaching consequences. In the case of Canada, there is a list of close to 18,000 goods, but there are hardly more than 300 service items. . . . In spite of the fact that the Canadian Standard Industrial Classification lists less goods-producing industries (403) than their service-producing counterparts (445). The fact that there are (often) no catalogued services implies that there is no information on values (and accordingly on quantities) below the level at which they are reported in an ordinary business income statement. Furthermore, in the absence of a body with quasi-judicial powers comparable to customs, there is no assurance that even if such records are kept they would be standard from one business to another.

It should then be possible *inter alia* to significantly improve our currently available measures of services sector productivities, for statistical comparisons both over time and space. In fact, there seems to be an *emerging consensus* that a much more detailed and standardized classification of services commodities, combined with appropriate conceptual developments, is the successful route for future analysis of services. [See, in particular, Carter 1989; Uno 1989; Federal Reserve Board 1988; Drechsler 1990; and NBER 1990.]

We take the view that the analysis of this paper has economic policy orientations for business cycle indicators, for an improved and extended set of national economic accounts, and for conceivably understanding the price-adjustment process with respect to services. It might turn out, for example, after appropriate service sector measurements become available, that services are an increasing source of short-term economic cyclical variability. At the same time, it might be shown that services capital formation is a major source of long-term secular economic growth. A price-adjustment process, applicable to services, might tell us something about the ultimate sources of price inflation in an industrial economy with "goods/services convergence." The price-adjustment process should also help us understand how to improve productive efficiency via the markets for services commodities.

All the phenomena in the preceding paragraphs would be key ingredients when we come to consider the so-called "borderline cases" between goods and services. Our investigation leads directly to the recommendation *not* to waste precious research energy trying to statistically distinguish "goods" from "services" over an increasingly important range of such borderline cases (as is done, for example, in United Nations [1987]). Rather, we should be concerned with extending and reinterpreting economics and statistical doctrines so as to be applicable to production commodities, taken as a whole, together with their corresponding production activities.

Annex on Retail Trade

The purpose of this annex is to briefly clarify the nature of retail-trade services, first from the viewpoint of Peter Hill's basic definition, and second from the viewpoint of newly emerging trends.

The nominal value of gross output of retail trade is measured by the total value of the *margins* charged on the goods passing through retail-trade purchases (as distinct from the total value of sales). The value added of retail trade is then calculated in the standard way. This generally accepted method reflects a particular view of the economic role of retail-trade distribution.

The function of the distributor, then, is to provide certain services to the customers in addition to the goods that are merely passed on in unchanged form. The services consist of bringing together in a convenient location, or in a convenient display form, a wide range of goods from which purchases can be made. So the condition of the customer is *changed* (in fact, improved) by being exposed to a greater range of available goods displayed in effective form. The retail distributor communicates advice and information to the customer together with provision of ancillary services such as maintenance, delivery, and product quality guarantees. The ancillary services reinforce the idea of the retail distribution service as an economic activity which changes the condition of the consuming (customer) economic unit and is provided to the economic unit without intervening processes. The distributor and the customer are typically aware of each other and the produced distribution service is the "mirror-image" of its consumption. All this, then, is in strict conformity to Hill's basic definition of "services" and the corresponding implied "goods/services" distinctions outlined in Section B of this paper.

We would argue, however, that this classical view of retail trade is rapidly becoming outmoded. The essence of retail trade, today, seems to be more one of "self service" on the part of the consumer rather than "full service" provided by the distributor. The gross margin and value added of the retail-trade industry appear to mainly reflect both pre-sales operations and post-sales operations with potential consuming units. The distributor's and the customer's awareness of and direct contact with each other (at the "point of sales") play a very minor role in the value of the overall operation. The bulk of the distributor's "service" is performed quite independently of who the particular customer turns out to be.

Indeed, with mail-order and catalogue retail trade, the producer/consumer contact phenomenon is close to zero. In this case, retail trade is more characteristic of a goods activity rather than a services activity. Moreover, any information service provided by the distributor to the consumer is, in fact, "transferable" from one customer to other potential customers, though the transfer procedure, like "self service," is essentially outside the official production boundary. Furthermore, shopping centre operations offer a range of "collective services" to potential customers that are also not officially counted in production measurements. Some of these emerging trends and their analysis are discussed in further detail in Acheson and Ferris [1988].

One other point concerns Peter Hill's implicit assumption that retail-trade "service" is always with respect to "goods." We are, however, discovering that this assumption is no longer valid. There are, today, retail and wholesale trade distributors of a wide range of financial/insurance/real estate services. These activities are largely stimulated by the information and computer/communication revolutions. Once again, the nature of the provided services

does not necessarily satisfy Hill's basic definition *and* its supposed economic implications (i.e., the standard distinctions), *except* in the trivial sense that the consumption of any commodity by an economic unit may be tantamount to a change in the condition of the consuming economic unit.

Notes

1 This paper was prepared as part of the Economic Council of Canada's project on Employment and the Service Economy. The Council's research has been summarized in a report, *Employment in the Service Economy* [1991]. The analysis in the present paper is described very briefly in Chapter 2 of that report.

2 The required developments in economic theory and statistics to satisfy the needs of important contemporary changes in the "goods economy" are given relatively little emphasis in this paper. So the paper does not intend to deal with both sides of the problem.

3 Though the conceptual developments' offer some guidelines towards the resolution of the "decomposition" problem, much more work is required for a complete resolution of the problem. See, again, *The Economist* [1990] for ideas on identifying the smallest "unit of service" and the subsequent discussion in this section of the paper.

Bibliography

Acheson, K., and S. Ferris [1988]. "An overview of the retail and wholesale trade services." In *Trade and Non-Traded Services: Theory, Measurement and Policy*, J. McRae and M. Desbois. Halifax: Institute for Research on Public Policy.

Blades, D. [1987]. "Goods and services in OECD countries." *OECD Economic Studies* (Spring 1987).

Carlton, D., and J. Perloff [1990]. *Modern Industrial Organization*. London: Scott, Foresman and Little.

Carson, C. [1989]. "The United Nations System of National Accounts: a revision for the 21st century." Paper presented to the American Economic Association, New York, December.

Carter, A. [1989]. "Input-output recipes in an information economy." *Economic Systems Research* 1, no. 1.

Cole, R. [1990]. "Reviving the federal statistical system: a view from industry." *American Economic Association Papers and Proceedings*, May.

Drechsler, L. [1990]. "A note on the concept of services." *The Review of Income and Wealth* (September).

Duchin, F. [1988]. "The role of services in the U.S. economy." Paper prepared for the Institute of Economic Analysis, New York University, February.

Economic Council of Canada [1987]. *Innovation and Jobs in Canada: Research Report*. Ottawa: Supply and Services Canada.

_____ [1991. *Employment in the Service Economy: Research Report*. Ottawa: Supply and Services Canada.

Federal Reserve Board [1988]. "Recent developments in economic statistics at the federal reserve." *Business Economics* (October).

Fisher, A. [1939]. "Production; primary, secondary and tertiary." *Economic Record* (June).

Gordon, R. [1990]. "What is new-Keynesian economics." *Journal of Economic Literature* (September).

Gorman, J. [1990]. "Review of the proposed capital measures for the revised SNA." Paper prepared for the Workshop on the Revision of the United Nations System of National Accounts, Washington, D.C., November.

Grubel, H., ed. [1987]. *Conceptual Issues in Service Sector Research: A Symposium*. Vancouver: The Fraser Institute.

Grubel, H., and M. Walker [1988]. *Service Industry Growth: Causes and Effects*. Vancouver: The Fraser Institute.

Hahn, F. [1987]. "Adjustment processes and stability." In *The Palgrave Dictionary of Economics*. London: Macmillan.

Harrison, A., and C. Carson [1989]. "Service output as capital: what are the implications?" Paper prepared for the Revision of System of National Accounts Coordinating Group, September.

Hill, P. [1977]. "On goods and services." *The Review of Income and Wealth* (December).

_____ [1987]. "The economic significance of the distinction between goods and services." Paper presented at the Conference of the International Association for Research in Income and Wealth, Rome, August.

Holmstrom, B. [1985]. "The provision of services in a market economy." In *Managing the Service Economy*, ed. R. Inman. Cambridge: Cambridge University Press.

Kenessey, Z. [1988]. "A new index of service production: a companion to the Index of Industrial Production." Paper presented to the Allied Social Science Association Meeting, New York, December.

_____ [1989]. "Potential GNP estimates based on sectoral capacity measures." Paper presented at the Conference of the International Association for Research in Income and Wealth, West Germany, August.

Kenessey, Z., and H. Postner [1989]. "Orders, capacity, and inventories for services." Paper abstract prepared as a proposal for future research, May.

National Bureau of Economic Research (NBER) [1990]. "Conference proceedings on output measurement in the services sector," to be published at a later date by the University of Chicago Press.

Petit, P. [1987]. "Services." In *Palgrave Dictionary of Economics*. London: Macmillan.

Postner, H. [1988]. "Linkages between macro and micro business accounts: implications for economic measurement." *The Review of Income and Wealth* (September).

_____ [1991]. "Tradeable-rights approach to environmental policy: some accounting problems of application." Paper prepared for the Economic Council of Canada, Ottawa, June.

Ross, S. [1987]. "Arbitrage." In *The Palgrave Dictionary of Economics*. London: Macmillan.

Sommers, A. [1988]. *The U.S. Economy Demystified: What the Major Economic Statistics Mean and Their Significance for Business*. Boston: Lexington Books, D.C. Heath.

Statistics Canada [1988]. "Overview of statistics on service industries." Unpublished paper prepared for research on service industry measurement, August.

_____ [1989]. "Statistics Canada's new system of leading indicators." In *Canadian Economic Observer*. Ottawa, February.

The Economist [1990]. "Serves them right," May 5.

United Nations [1979]. *Manual on National Accounts at Constant Prices*. Statistical Papers Series M, no. 64, New York.

United Nations Statistical Office [1987]. *The Concept of Services in Statistics*. New York, November.

Uno, K. [1989]. *Measurement of Services in an Input-Output Framework*. Amsterdam: North-Holland.

Veil, E. [1989]. "Analytical classification of trade in services." Paper presented at the Conference of the International Association for Research in Income and Wealth, Lahnstein, West Germany, August.

Zarnowitz, V. [1973]. *Orders, Production, and Investment: A Cyclical and Structural Analysis*. National Bureau of Economic Research. New York: Columbia University Press.